

**542. SCIENCE STANDARDS - GRADE 1, SECTIONS 543 THROUGH 553.**

The samples associated with the content standards are meant to illustrate meaning and to represent possible areas of applications. They are not intended to be an exhaustive list, but are samples of applications that would demonstrate learning.

**543. UNIFYING CONCEPTS OF SCIENCE.**

Standard - The student will:	Content Knowledge and Skills:	Samples of Applications:
01. Understand concepts and processes of evidence, models, and explanation.	a. Explore the concepts of observation and data collection.	i. Daily weather graph. <ul style="list-style-type: none"> <li>• Predict</li> <li>• Observe</li> <li>• Record</li> </ul> ii. Observe metamorphosis of insects and record observations.
	b. Explore and use various models.	i. Use a plant model to locate major parts of a plant. ii. Use an animal model to locate major parts of an animal.
02. Understand constancy, change, and measurement.	a. Understand that changes occur and can be measured.	i. Measure a plant's growth daily and discuss its changes. ii. Observe the three states of matter (ice cube, water, water vapor). iii. Bake a cake and observe physical changes.
	b. Measure in both standard and non-standard units.	i. Measure your desk in inches and using hands. ii. Measure the room using the students' shoes. iii. Use a balance scale to weigh different objects. iv. Use a melting ice cube to measure time. v. Using different containers, find out how many scoops are needed to fill each container.
03. Understand the theory that evolution is a process that relates to the gradual changes in the universe and of equilibrium as a physical state.	a. Understand the concepts of past, present, and future.	i. Draw a picture of yourself as a baby, at the present, and how you will look at 100. (Good 100-day activity.) ii. What did the world look like when the dinosaurs were here? What does it look like now? What will it look like in 100 years?
04. Understand concepts of form and function.	a. Identify shape and use of objects.	i. Play an animal matching game. <ul style="list-style-type: none"> <li>• Match mouths to diet</li> <li>• Match feet to habitat</li> <li>• Match body type to land, air, and water</li> </ul> ii. Build a new animal. <ul style="list-style-type: none"> <li>• Choose a head</li> <li>• Choose feet</li> <li>• Choose body</li> </ul> iii. Put pieces together and name new animal. Describe where it might live and what it might eat. iv. "Project Learning Tree," Birds and Worms.

#### 544. CONCEPTS OF SCIENTIFIC INQUIRY.

Standard - The student will:	Content Knowledge and Skills:	Samples of Applications:
01. Understand scientific inquiry and develop critical thinking skills.	a. Brainstorm questions that can be investigated.	i. How does a flashlight work? ii. Why do leaves fall? iii. What will a magnet stick to? iv. Estimation activity.
	b. Make observations.	i. Discover what would happen to a seed that is planted under different conditions (without water, without light). ii. Use five senses to determine what is in a container.
	c. Use various tools to gather information.	i. Given an assortment of tools, students will choose the appropriate tool(s) to measure an object.
	d. Explore information and evidence.	i. Share ideas through class discussion. ii. Graph information to note change or compare and contrast.
	e. Use observations to make guesses.	i. Combine vinegar with another substance and predict what would happen (sugar, baking soda). Have class discussion. ii. Discriminate among flour, sugar, salt, baking powder, baking soda. iii. Use observations to make predictions about tomorrow's weather.
	f. Communicate observations.	i. Use logs, journals, pictures, and/or oral discussions to communicate observations.

#### 545. CONCEPTS OF PHYSICAL SCIENCE.

Standard - The student will:	Content Knowledge and Skills:	Samples of Applications:
01. Understand the structure and function of matter and molecules and their interactions.	a. Know that objects have combinations of properties.	i. Mystery sack or surprise box to describe what is inside. ii. Describe smells from extracts placed in film canisters or balloons. iii. Hearing experiment.
	b. Recognize and classify matter as a solid, liquid, or gas.	i. Compare and contrast different items in classroom and outdoor environment. ii. Create "ooblick" using cornstarch and water. Discuss properties. iii. Using pictures create a collage of solids, liquids, and gases.
	c. Recognize that matter can change states (solid, liquid, gas).	i. Gelatin jigglers. ii. Ice cube, water, steam. iii. Tin-can ice cream.
02. Understand concepts of motion and forces.	a. Explore the position and motion of objects.	i. For instance, front, back, up, down, under, over, between, left, right, forward, backward, fast, slow.

	b. Explore different kinds of energy.	i. Solar cooking. ii. Wind mills. iii. Water wheels. iv. Use a pop bottle rocket filled with different levels of liquid to explore force.
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#### 546. CELLULAR AND MOLECULAR CONCEPTS.

Cellular and Molecular Concepts standards do not apply at this grade level.

#### 547. INTERDEPENDENCE OF ORGANISMS AND BIOLOGICAL CHANGE.

Standard - The student will:	Content Knowledge and Skills:	Samples of Applications:
01. Understand the theory of biological evolution.	a. Observe and explore the life cycles of plants and animals and their basic needs.	i. Using literature, learn about different animals that have adapted such as the Arctic Fox, animals on the Galapagos Islands, and the snowshoe hare. ii. Using videos learn about different plant and animal adaptations.
	b. Recognize that animals live in different habitats for which they are suited.	i. Use magazine pictures to graph appropriate and inappropriate habitats. ii. Group pictures of animals in their environment/land, air, and water.

#### 548. MATTER, ENERGY, AND ORGANIZATION IN LIVING SYSTEMS.

Standard - The student will:	Content Knowledge and Skills:	Samples of Applications:
01. Understand the relationship between matter, energy, and organization to trace matter as it cycles and energy as it flows through living systems and between living systems and the environment.	a. Understand that living things need food to survive.	i. Learn about different systems that keep a tree alive ("Project Learning Tree," Tree Factory). ii. Identify the components of a habitat and the basic need for them ("Project Wild," Habitat Lap Sit Activity). iii. Care for a classroom pet. iv. Choose an animal and create a diorama or mobile of that animal in their habitat keeping in mind their needs.

#### 549. EARTH AND SPACE SYSTEMS.

Standard - The student will:	Content Knowledge and Skills:	Samples of Applications:
01. Understand scientific theories of origin and subsequent changes in the universe and earth systems.	a. Identify the four seasons and their characteristics.	i. Study the cycle of a tree through the four seasons. ii. Draw a picture of a tree depicting its appearance through all four seasons. iii. As a yearlong bulletin board display, decorate a deciduous tree according to the season.
	b. Understand the characteristics of different weather conditions.	i. As you are graphing your weather, discuss the different characteristics of the weather.

#### 550. TECHNOLOGY.

Standard - The student will:	Content Knowledge and Skills:	Samples of Applications:
01. Understand the relationship between science and technology and develop the abilities of technological design and application.	a. Distinguish between natural objects and objects made by humans.	i. Tree versus pencil.
	b. Recognize that people have invented tools for everyday life and for scientific investigations.	i. Pose a situation and discuss what tools would be needed. ii. Use and experience tools.
	c. Create a tool to perform a specific function.	
	d. Use available and appropriate technology.	i. Use computers and calculators.

### 551. PERSONAL AND SOCIAL PERSPECTIVES.

Standards - The student will:	Content Knowledge and Skills:	Samples of Applications:
01. Understand common environmental quality issues, both natural and human induced.	a. Identify the characteristics of the local environment.	i. Take a walk outside and observe the physical characteristics of surrounding environment. ii. Draw picture of observation. iii. Construct a class model using different materials.
02. Understand the importance of natural resources and the need to manage and conserve them.	a. Understand the concept of recycling.	i. Participate in a recycling program. ii. Create a recycled art project. iii. Create a compost tub using worms. iv. Bury garbage that includes organic and inorganic materials. Dig up and check weekly.
	b. Understand the conservation of natural resources.	i. Plant trees. ii. Make posters to remind people to conserve the natural resources. iii. Use literature ( <u>The Lorax</u> , <u>The Great Kapok Tree</u> , <u>Just a Dream</u> ).

### 552. HISTORY OF SCIENCE.

Standards - The student will:	Content Knowledge and Skills:	Samples of Applications:
01. Understand the significance of major scientific milestones.	a. Understand major contributions of various scientists and researchers.	

### 553. INTERDISCIPLINARY CONCEPTS.

Standards - The student will:	Content Knowledge and Skills:	Samples of Applications:
01. Understand that interpersonal relationships are important in scientific endeavors.	a. Learn appropriate cooperation and interaction skills.	i. Divide puzzle pieces into four envelopes. Give each member of a four-person team an envelope. The team then assembles a puzzle.

02. Understand technical communication.	a. Understand and follow instructions.	i. Use pattern blocks. Let students verbally direct each other to duplicate the design. Place students back to back. ii. Use a listening page.
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